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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/811,475	03/24/2004	Michael Hansen	HK-0795	1760

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EXAMINER	
PARK, SOO JIN	

ART UNIT	PAPER NUMBER
2624	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/811,475	HANSEN ET AL.	
	Examiner	Art Unit	
	SOO JIN PARK	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 November 2008*.

2a)☒ This action is FINAL. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. In response to the amendment filed on 11/03/2008, all the amendments to the claims have been entered and the action follows:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ng et al (USPN 7,079,281) in view of Honma (USPN 6,002,845).

Regarding claim 1, Ng discloses quantizing the binary image data with n bits, wherein n>1 (see column 13 lines 19-24 and figure 14, a binary image quantized with 8 bits).

Ng fails to disclose:

filtering the quantized image data with a low-pass filter having a filter window smaller than a screen cell; and

obtaining corrected quantized image data from the filtered image data with a threshold value operation.

In a similar field of endeavor, Honma teaches:

filtering the quantized image data with a low-pass filter having a filter window smaller than a screen cell (see column 5 lines 43-54, averaging only nearby pixels to convert the binary image into a smooth image); and

obtaining corrected quantized image data from the filtered image data with a threshold value operation (see column 5 lines 54-57, using LUT to adjust the smooth image).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Ng with Honma, which is in a similar field of endeavor of smoothing a binary image (see Ng column 13 lines 27-32 and Honma column 5 lines 54-57), and average only nearby pixels to convert a binary image into a smooth image and LUT match the smooth image to further adjust the smooth image, as taught by Honma, for the purpose of matching to printer characteristics for printing out (see Honma column 5 lines 54-57).

Regarding claim 14, Ng discloses quantizing the binary image data with n bits, wherein n > 1 (see column 13 lines 19-24 and figure 14, a binary image quantized with 8 bits).

Ng fails to explicitly disclose in a three dimensional representation, the quantized binary image data forms a plateau having vertical flanks.

Ng suggests explicitly disclose in a three dimensional representation, the quantized binary image data forms a plateau having vertical flanks (see figure 14, a 2D image wherein each pixel in the image has one of two values).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to represent figure 14 in 3D (the row and column of figure 14 being two dimensions and the pixel values being a third vertical dimension), and also recognize that adjacent pixels with values 255 form a plateau, since there are 3 variables given as shown in figure 14 (the row and column of figure 14 and the pixel values) already and there is no need for further calculation/modification of the image data to do so.

Ng fails to disclose:

filtering the quantized image data with a low-pass filter having a filter window smaller than a screen cell, such that, in the three dimensional representation, the slopes of the vertical flanks are reduced by the filtering; and

performing a threshold value operation to obtain corrected quantized image data from the filtered image data.

Honma teaches:

filtering the quantized image data with a low-pass filter having a filter window smaller than a screen cell, such that, in the three dimensional representation, the slopes of the vertical flanks are reduced by the filtering (see column 5 lines 43-54, averaging only nearby pixels to replace the binary image by a smooth image); and

performing a threshold value operation to obtain corrected quantized image data from the filtered image data (see column 5 lines 54-57, using LUT to adjust the smooth image).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to average only nearby pixels to convert a binary image into a smooth image and LUT match the smooth image to further adjust the smooth image, as taught by Honma, for the purpose of matching to printer characteristics for printing out (see Honma column 5 lines 54-57), wherein it would have been obvious to one of ordinary skill in the art at the time the invention was made, that by replacing pixel values of 0 and 255 of the binary image by average values in between 0-255, the slope of the 3D representation reduces.

3. Claims 2-5, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ng and Honma in view of Sumimoto et al (USPN 7,031,545).

Regarding claims 2 and 15, Ng and Honma disclose everything claimed as applied above (see claims 1 and 14), however fail to disclose providing the low-pass filter with an asymmetrical distribution of filter coefficients with respect to the filter window.

In a similar field of endeavor of applying a low pass filter to an image, Sumimoto teaches providing the low-pass filter with an asymmetrical distribution of filter coefficients with respect to the filter window (column 4 line 58 through column 5 line 24 and figures 6(A)-(C), and 7(A)-(G), a low pass filter with asymmetrical distribution of filter coefficients with respect to filter window, such as that shown in figures 6(B) and 6(C), is provided).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Ng and Honma with Sumimoto, which is in a

similar field of endeavor of smoothing a binary image (see Sumimoto figures 7(a)-7(g)), and provide a low pass filter with asymmetric filter coefficients with respect to the filter window, as taught by Sumimoto, for the purpose of descreening a binary image by affecting only one side of an edge (see Sumimoto column 5 lines 16-24).

Regarding claim 3, Sumimoto further teaches asymmetrically distributing the filter coefficients of the low-pass filter with respect to the filter window (column 4 line 58 through column 5 line 24 and figures 6(A)-(C), and 7(A)-(G), a low pass filter with asymmetrical distribution of filter coefficients with respect to filter window, such as that shown in figures 6(B) and 6(C), is provided).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to asymmetrically distribute filter coefficients of a low pass filter with respect to the filter window, as taught by Sumimoto, for the purpose of descreening a binary image by affecting only one side of an edge (see Sumimoto column 5 lines 16-24).

Regarding claims 4, 5, and 16, Sumimoto further teaches obtaining the asymmetrical distribution of the filter coefficients from a symmetrical filter by shifting a filter function by fractions of an image point (see figure 6(B), low pass filter is a horizontally symmetrical filter shifted to the right by 1 image point unit).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to obtain an asymmetrically distributed filter coefficients by shifting a filter function by fractions of an image point, as taught by Sumimoto, for the

purpose of descreening a binary image by affecting only one side of an edge (see Sumimoto column 5 lines 16-24).

4. Claims 6-11, 17-19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ng and Honma in view of Sanger (USPN 6,717,601).

Regarding claims 6 and 17, Ng and Honma disclose everything claimed as applied above (see claims (1 and 14), however, Ng and Honma fail to disclose carrying out the threshold value operation with a threshold value selected as a function of the local gray value and of the desired correction magnitude.

In a similar field of endeavor, Sanger teaches carrying out the threshold value operation with a threshold value selected as a function of the local gray value and of the desired correction magnitude (see column 9 line 51 through column 10 line 9, threshold values are selected as a function of local average gray value and of the desired dot gain).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Ng and Honma with Sanger, which is in a similar field of endeavor of descreening a binary image (see Sanger column 6 lines 13-15), and select threshold values as a function of the local gray value and of the desired correction magnitude, as taught by Sanger, for the purpose of optimizing the process of adding dot-gain while maintaining dot fidelity (see Sanger column 5 lines 56-61).

Regarding claims 7 and 18, Sanger further teaches storing threshold values in a threshold value table (see column 9 line 51 through column 10 line 9, a table of threshold is computed).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made store threshold values in a threshold value table, as taught by Sanger, for the purpose of optimizing the process of adding dot-gain while maintaining dot fidelity (see Sanger column 5 lines 56-61).

Regarding claim 8, Ng, Honma, and Sanger disclose everything claimed as applied above (see claims 6 and 7).

Regarding claims 9, 10, 11, 19, and 20, Sanger further teaches determining a threshold value function T1=f1(G,dG) empirically based upon model screen dots and obtaining a threshold value function T2=f2(G,dG) therefrom with approximation functions (see column 9 line 51 through column 10 line 9, a function is determined relating threshold, G, and dG based on model screen dots and obtaining intermediate threshold function value points by estimation, wherein G is the input gray value and dG is dot-gain which is desired amount of correction).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to determine a threshold value function based on model screen dots and estimate another threshold value function, as taught by Sanger, for the purpose of adjusting binary bitmap files to make proof and print appear the same (see Sanger column 6 lines 33-36).

5. Claims 12, 13, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ng and Honma in view of Loce et al (USPN 7,079,289).

Regarding claim 12, Ng and Honma disclose everything claimed as applied above (see claim 1), however, Ng and Honma fail to disclose obtaining corrected binary image data from the corrected quantized image data by quantization with 1 bit.

In a similar field of endeavor, Loce teaches obtaining corrected binary image data from the corrected quantized image data by quantization with 1 bit (see column 6 lines 35-43, printing a thresholded binary image data by 2 quantization tonal levels, i.e. black and white, therefore applying quantization with 1 bit).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Ng and Honma with Loce, which is in a similar field of endeavor of printing binary halftone images (see Loce column 1 lines 8-10), and quantize a grayscale image with 1 bit i.e. 2 tonal levels of black and white, as taught by Loce, for the purpose of printing.

Regarding claims 13 and 21, Hg, Honma, and Loce disclose everything claimed as applied above (see claims 1, 12, and 14).

Response to Arguments

6. Applicant's arguments with respect to claims 1-21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SOO JIN PARK whose telephone number is 571-270-3569. The examiner can normally be reached on Monday - Friday 9:00 - 5:00 ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on 571-272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SOO JIN PARK
Examiner
Art Unit 2624

SJP
February 25, 2009

/Vikkram Bali/
Supervisory Patent Examiner, Art Unit 2624